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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,119	09/08/2003	Hideki Ueno	ICC-273	7055

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HENKEL LOCTITE CORPORATION
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EXAMINER

ZIMMER, MARC S

ART UNIT PAPER NUMBER

1712

DATE MAILED: 10/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/656,119

Applicant(s)

UENO ET AL.

Examiner

Marc S. Zimmer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-14 and 16 is/are allowed.
- 6) ☒ Claim(s) 1-7, 15 and 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Priority

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan in December, 2002. It is noted, however, that applicant has not filed a certified copy of the Japanese application as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7, 15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moretto et al., U.S. patent # 4,214,066 in view of review of silicon-based compounds taken from *Kirk-Othmer's Encyclopedia of Chemical Technology*, 3rd Edition and the formula relating viscosity and number of repeat units in *Silicones, An Introduction to Their Chemistry and Applications*. Moretto discloses a curable organosiloxane composition that is modified in its properties by way of the incorporation of polycarbodiimide, wherein the carbodiimide polymer is either blended directly with the base silicone polymer or, alternatively is prepared *in situ*. Among the base polymers contemplated therein are linear polydiorganosiloxanes having between 2 and 1050 repeat units and bearing hydroxyl groups at the terminal positions (column 2, lines 44-63). Crosslinking agents including alkoxysilicon compounds are contemplated in column 5, 38-43 though no specific examples of this class of materials are provided. It is not insignificant that Moretto sets apart alkoxysilicon compounds from

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tetraalkoxysilanes wherein all of the groups appended to the central silicon atom are alkoxy groups.

Insofar as Moretto does not outline any specific embodiments of an alkoxy silicon compound, the skilled artisan would turn to the related prior art, i.e. those that teach condensation-curable polysiloxane systems, to ascertain what materials might be used in this capacity. In *Kirk-Othmer's Encyclopedia of Chemical Technology, 3rd Edition*, there is a discussion of one- and two-component RTV silicone rubbers wherein methoxysilanes are mentioned as an advantageous embodiment of a crosslinking agent, advantageous because the by-product of hydrolysis/condensation of the crosslinker is not acidic. (Several patent documents exploiting methoxysilanes are cited therein including U.S. patent nos. 3,689,454 and 3,334,067. Upon reviewing these references, it is clear that the alkoxy silicon compounds originally mentioned by Moretto are homologous with the organosilicon compounds disclosed by Applicant as they contain silicon-bound hydrocarbon moieties in addition to the alkoxy substituents.) Also, on page 946, paragraph 4 of this document, "alkoxy-functional silicon compounds", which may also be aptly referred to as organosilicon compounds given the presence of methyl substitution on the silane crosslinker, are recited as part of the discussion of two-part RTV rubbers.

Concerning the weight contribution of the polycarbodiimide, Moretto states that it comprises 5 to 80% as a percentage of the weight of the polysiloxane.

As for claim 2, the amount of crosslinking agent is not expressly defined in terms of its weight relative to that of the base polymer. Nonetheless, one of ordinary skill will,

as a matter of routine experimentation, adjust the quantity of crosslinking agent to obtain the extent of cure needed for a particular application. That is, less crosslinking agent is known to provide a slightly flowable gelatinous matrix whereas heavy crosslinking will result in the formation of a firm rubber. "Discovering an optimum value of a result effective variable involves only routine skill in the art." *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Two-part compositions and cured products derived therefrom are described in column 5, lines 44-45 and column 6, lines 3-8 respectively.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moretto et al., U.S. patent # 4,214,066 and *Kirk-Othmer's Encyclopedia of Chemical Technology*, 3rd Edition as applied to claims 1-2, and 4-7 above, and further in view of the formula relating viscosity and number of repeat units in *Silicones, An Introduction to Their Chemistry and Applications* authored by Freeman and the definition of "viscosity", particularly dynamic viscosity versus kinematic viscosity set forth in *Hawleys Condensed Chemical Dictionary*, 14th Edition.

Whereas Applicant reports the number of repeat units "n" in claim 3 in terms of its associated viscosity, the reference discloses only a polymer chain length. Freeman relates viscosity in centistokes and polymer chain length as follows:

$$\log \eta = 0.1(n)^{1/2} + 1.1$$

where η is viscosity in centistokes. Rearranging to isolate "n":

$$n = ((\log \eta - 1.1)/0.1)^2$$

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Applicant states that the viscosity of the hydroxy-terminated polymer is between 10 and 10,000,000 in centipoise. Nonetheless viscosity in centistokes is related to viscosity in centipoise as $v_{cs} = v_{cp}/\rho$ where ρ is density of the polymer. For linear polysiloxanes, the density quickly tends towards 1 according to Table 2.2 from *Silicones, An Introduction to Their Chemistry and Applications* hence the viscosity in cs is essentially equal to that in cp. Where the viscosity is 10,000,000 cp (equals 10,000,000 centistokes), which represents the high end of Applicant's range, the number of repeat units is

$$((\log 10,000,000 - 1.1)/0.1)^2 = 3481 \text{ repeat units}$$

Where the viscosity is 10 cp (equals 10 centistokes), which represents the low end of Applicant's range, the number of repeat units is

$$((\log 10 - 1.1)/0.1)^2 = 1 \text{ repeat unit}$$

Accordingly, the siloxane polymer disclosed by Applicant may have between 1 and 3481 repeat units. Clearly, the analogous polymer in Morettee's disclosure adheres to this range.

Allowable Subject Matter

Claims 8-14 and 16 are allowable. Though a member of the class of materials known as organosilicon compounds, amino-functional silanes are used far less frequently as crosslinking agents and are not implicit in the supporting reference applied herein.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc S. Zimmer whose telephone number is 571-272-1096. The examiner can normally be reached on Monday-Friday 8:00-4:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

October 26, 2004

Mare Zimmer

Mare Zimmer
AV 1712